### Unit 1

### Classification of food and beverages

# Detailed Study Notes on Food and Beverages Curriculum

## **1.1 Food: Importance for Life, Essential Nutrients, Functions of Food, Indian Food Market**

### ****Importance of Food for Life****

* **Energy Source**: Food provides calories for bodily functions, movement, and metabolic activity.
* **Growth & Repair**: Proteins and minerals aid in growth, development, and repair of body tissues.
* **Immunity**: Vitamins, minerals, and bioactive compounds boost resistance to disease.
* **Psychological Role**: Comfort, stress relief, cultural identity, and social bonding.
* **Economic Role**: Food industry contributes to employment, trade, and GDP.

### ****Essential Nutrients****

* **Carbohydrates**: Main energy source; found in cereals, rice, wheat, sugar, potatoes.
* **Proteins**: Growth and tissue repair; animal (meat, fish, dairy) and plant sources (pulses, soy, legumes).
* **Fats & Oils**: Concentrated energy, essential fatty acids, absorption of fat-soluble vitamins (A, D, E, K).
* **Vitamins**: Organic compounds vital for metabolic functions (e.g., Vitamin C for immunity, Vitamin D for bones).
* **Minerals**: Elements like calcium (bone health), iron (hemoglobin), iodine (thyroid regulation).
* **Water**: Hydration, nutrient transport, waste removal.
* **Dietary Fiber**: Aids digestion, prevents constipation, reduces risk of lifestyle diseases.

### ****Functions of Food****

1. **Physiological Functions**: Provides energy, builds tissues, regulates body functions.
2. **Psychological Functions**: Satisfies hunger, provides sensory pleasure (taste, aroma).
3. **Social Functions**: Integral to festivals, rituals, celebrations, and hospitality.

### ****Indian Food Market Scenario (with latest size & stats)****

* **Food processing sector size (India):** ~Rs **2.64 million crore** (US$ **307B**) in **2023**; projected to reach ~Rs **6.02 million crore** (US$ **700B**) by **2030**. Source: PHDCCI via IBEF.
* **Overall food & beverage industry (India):** ~US$ **334B** (recent estimate; methodology varies by firm). Source: Ken Research.
* **Packaged food market (India):** ~US$ **80.2B** (**2024**) → **US$ 115.9B** by **2030** (CAGR ~**6.3%**). Another estimate pegs **2025** size at **US$ 116.9B**. Source: TechSci Research.
* **Non‑alcoholic beverages market:** **INR 1.37 trillion** (**2023**) → **INR 2.10 trillion** by **2029** (CAGR ~**7.1%**). Source: ResearchAndMarkets/BusinessWire.
* **Food packaging market (proxy for processed/packaged growth):** **US$ 21.24B** (**2024**) → **US$ 34.74B** by **2030** (CAGR **8.5%** 2025–2030). Source: Grand View Research.
* **Private‑label packaged food:** **US$ 12.5B** (**2024**) → **US$ 18.0B** by **2030**. Source: Grand View Research.

**Key growth drivers:** Rising urbanization & incomes, organized retail & e‑commerce penetration, convenience/ready‑to‑eat foods, health & functional products, and improving cold‑chain/logistics. **Regulator:** FSSAI continues to set safety & labeling norms.

## **1.2 Classification of Foods and Terminologies**

### ****Perishable Foods****

* Spoil quickly; require refrigeration.
* Examples: Milk, fresh fruits, vegetables, raw meat, fish.

### ****Non-Perishable Foods****

* Long shelf life; resistant to spoilage.
* Examples: Rice, wheat, lentils, canned products.

### ****Shelf-Stable Foods****

* Can be stored at room temperature without refrigeration.
* Examples: Biscuits, packaged snacks, cereals.

### ****Fresh Food & Fresh Produce****

* Fresh food = minimally processed, recently harvested.
* Fresh produce = fruits, vegetables, and herbs sold in markets.

### ****Canned Foods****

* Sterilized, heat-processed in sealed containers.
* Examples: Canned beans, soups, fruits, tuna.

### ****Frozen Foods****

* Stored below 0°C to preserve.
* Examples: Frozen peas, chicken nuggets, ice cream.

### ****Dried Foods****

* Moisture removed to inhibit microbial growth.
* Examples: Raisins, dates, milk powder, spices.

### ****Grain Products****

* Cereals and millets: Rice, wheat, oats, barley, maize.

### ****Snacks****

* Ready-to-eat light foods.
* Examples: Chips, namkeen, biscuits.

### ****Jams & Jellies****

* Preserved fruits with sugar; shelf-stable spreads.

## **1.3 Main Food Types**

### ****Raw Red Meat****

* Sources: Beef, mutton, lamb.
* Nutrients: High protein, iron, B vitamins.
* Concerns: Spoils quickly, risk of contamination.

### ****Raw Poultry****

* Examples: Chicken, turkey, duck.
* Lean protein source, low fat.
* Requires safe handling due to salmonella risk.

### ****Cooked, Cured & Processed Meat****

* Sausages, ham, bacon, kebabs.
* Preserved by curing, salting, smoking.
* Longer shelf life but may contain high sodium.

### ****Fish & Fish Products****

* Includes freshwater and marine fish.
* Nutrients: Omega-3 fatty acids, protein, iodine.
* Forms: Fresh, frozen, dried, canned.

### ****Fruits & Vegetables****

* Rich in vitamins, minerals, antioxidants, fiber.
* Consumed fresh, dried, preserved.
* Essential for prevention of chronic diseases.

### ****Dairy Products****

* Milk, yogurt, butter, cheese.
* Provide calcium, protein, vitamin D.
* Essential for bone health and growth.

### ****Fats & Oils****

* Sources: Ghee, butter, sunflower oil, olive oil.
* Provide essential fatty acids and energy.
* Overconsumption linked to obesity, heart disease.

### ****Fresh Herbs & Spices****

* Coriander, turmeric, cardamom, cinnamon.
* Used for flavor, aroma, and medicinal value.
* Rich in antioxidants and bioactive compounds.

### ****Nuts & Seeds****

* Almonds, walnuts, flaxseeds, sunflower seeds.
* Rich in healthy fats, proteins, minerals.
* Promote heart health, brain function.

## **1.4 Beverages: Indian Market and Types**

### ****Indian Beverage Market****

* **Traditional Drinks**: Lassi, buttermilk (chaas), sugarcane juice, nimbu pani, masala chai.
* **Packaged Market**: Carbonated drinks, bottled water, fruit juices.
* **Health Beverages**: Herbal teas, probiotic drinks, protein shakes.
* Growing preference for low-sugar, functional beverages.

### ****Types of Beverages****

#### **Non-Alcoholic Beverages**

* **Hot Beverages**: Tea, coffee, hot chocolate.
* **Cold Beverages**: Juices, aerated drinks, smoothies, milkshakes.
* **Functional Beverages**: Sports drinks, probiotic drinks, fortified water.

#### **Alcoholic Beverages**

* **Fermented**: Beer, wine, toddy.
* **Distilled**: Whiskey, rum, vodka.
* **Traditional Indian Alcoholic Drinks**: Feni (Goa), Mahua liquor (tribal regions).

## ✅ Summary

* **Food** is essential for survival, growth, immunity, and culture.
* **Nutrients** provide energy, repair, and regulatory functions.
* **Classification of foods** depends on perishability and processing.
* **Main food types** include meat, poultry, fish, fruits, vegetables, dairy, oils, herbs, nuts.
* **Beverages** are classified into alcoholic and non-alcoholic, with India having a diverse and growing market.